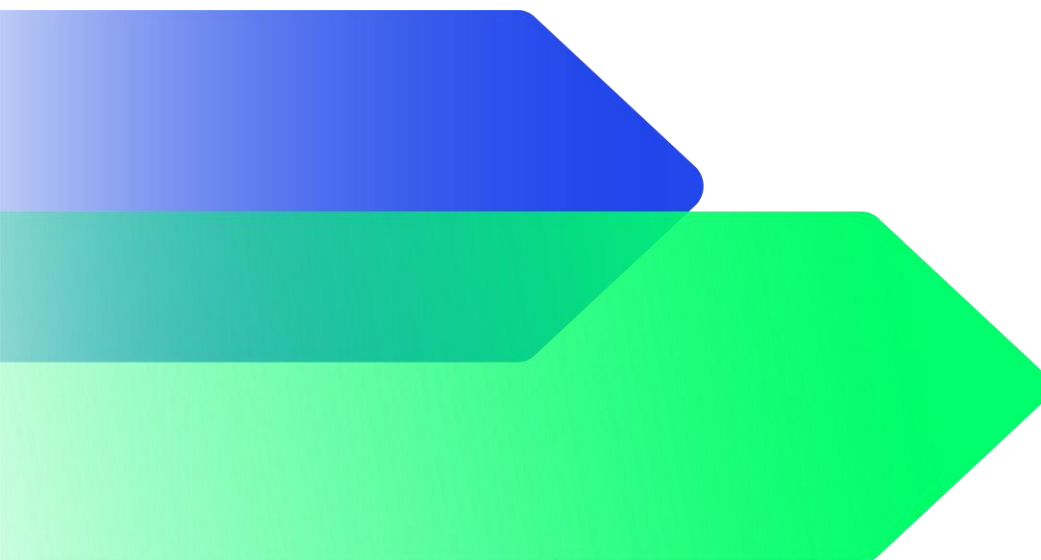


ENGAGING PRIVATE FINANCE ON GRIDS

Private Finance Investment Considerations for Grids



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Abbreviations

AI	Artificial Intelligence
CBI	Climate Bonds Initiative
EMDEs	Emerging Markets Developing Economies
EU	European Union
GGI	Green Grids Initiative
HVDC	High-voltage Direct Current
MDB	Multilateral Development Bank
NESO	National Energy System Operator
OECD	Organisation for Economic Co-operation and Development
PPP	Public Private Partnership
SPV	Special Purpose Vehicle
UK	United Kingdom
US	United States of America

1. Introduction

Global renewable energy capacity is set to increase by over 5,500 GW by 2030.¹ The acceleration is not only driven by decarbonisation ambitions, but also by the affordability of renewable power expansion. In recent years, curtailment rates, where renewable energy production exceeds what can be delivered to consumers, have grown up to 10% in some countries.¹ To sustain the growth of renewables, nations must implement measures to encourage electric grid growth, modernisation and overall system flexibility. To meet current energy transition targets, an average of US\$600 billion in grid investment is needed annually until 2030.^{Error! Bookmark not defined.} Addressing challenges with investing in grids would have a significant positive impact on renewable energy adoption and global decarbonisation targets.

The purpose of this short report is to detail the findings of 1-2-1 engagements with private finance institutions who invest in grid infrastructure globally as part of their portfolios. The project team explored organisations' perspectives on what is needed to scale investments in grids internationally, what the barriers in different markets are, and the role of initiatives such as the Green Grids Initiative (GGI) and the Grids and Storage Pledge at COP29 in accelerating change.

In 2024, the GGI encouraged power sector players, investors and stakeholders to commit to Global Grid Targets. The targets call for immediate action on upgrading grids, balancing supply and demand, adopting forward-thinking planning and creating favourable financing environments.² The relevant progress metrics and required efforts were further elaborated at COP29 with the Grids and Storage Pledge.³

1.1. Private Finance Perspectives

Private sector investors play a crucial role in bridging the funding gap between public investment limits and infrastructure needs, driving innovation and solution scaling. It is therefore critical to understand what drives private sector investment and what considerations must be made to encourage participation.

Interviews were carried out with representatives from private financial institutions. The purpose of these discussions was to raise awareness and explore how private finance institutions can be further engaged on global grid investment. The interviews focused on identifying the key factors needed to scale finance, understanding private sector perspectives on a potential Global Grid Target, and assessing the likelihood of investor support for the Green Grids Initiative and Targets. The findings highlight private sector interest areas, key considerations for grid investment, and the influence of regulatory environments on capital flows.

¹ IEA, ['Massive global growth of renewables to 2030 is set to match entire power capacity of major economies today, moving world closer to tripling goal'](#), 2024

² GGI, [Global Grid Targets: Enabling Decarbonization](#), 2024

³ COP29, [COP29 Global Energy Storage and Grids Pledge](#), 2024

2. The Private Sector Investment Landscape

Investments in grid infrastructure expansion and optimisation are essential for achieving global energy transition targets. The investment landscape is complex and interdependent, with a range of players acting across different roles and addressing specific focus areas. Key investor categories include government / public sector, development banks and multilateral financial institutions, Export Credit Agencies and private finance.

The private investor landscape in the Global North is characterised by substantial capital reserves, a focus on high returns, and a preference for stable, mature markets. Investors often seek diversification, risk mitigation, and long-term growth. When it comes to grid infrastructure, these characteristics could translate into a significant opportunity for the Global South. The Global South urgently needs improvements in grid infrastructure, including expanding electricity access, modernising outdated systems, and integrating renewable energy sources. Private sector investment is essential in providing the capital and expertise to develop robust and resilient grid systems. This involves funding projects that enhance transmission and distribution networks, improve grid stability, and support the transition to cleaner energy sources. However, managing investors risk appetites, creating clear routes for investment, and managing the impact of additional players will be key in both the Global North and South.

Table 1: Private Finance Investment Landscape

Private investor category	Motivation	Investment profiles	Risk profile
Commercial banks	Financial profitability in the form of interest and finance fees	<ul style="list-style-type: none"> • Project and balance sheet financing • Loans for renewable energy integration • Credit for infra. upgrades 	Moderate – prefer predictable cash flows
Private equity and infra. funds	Returns on investment through asset appreciation and efficiencies	<ul style="list-style-type: none"> • Acquiring and optimising existing assets • Investing in emerging grid technologies 	Moderate to high – open to high-risk high-reward innovation
Utility companies	Revenue through infrastructure asset ownership and related service offerings	<ul style="list-style-type: none"> • Direct investment in grid infra. assets • Development of renewable energy integration projects 	Low – focus on strategic investments
Pension funds and insurance companies	Profitability in the form of stable long-term returns	<ul style="list-style-type: none"> • Long-term investments in grid assets • Funding large-scale energy infrastructure projects 	Low – prefer predictable long-term returns

Venture capital and impact investors	Innovation with high growth and impact potential	<ul style="list-style-type: none"> • Funding scalable early stage ideas/ startups • Investing in digital solutions and Artificial Intelligence (AI) 	High – embrace high-risk high-reward innovation
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3. Responses from 1-2-1 engagements

3.1. Introduction

Private sector investors are increasingly interested in grids due to rising demand for new and upgraded infrastructure and energy finance. This interest is driven by trends such as digitalisation, AI-driven technologies, and the integration of renewable energy sources. However, several issues need to be addressed to facilitate investment, including the need for long-term certainty in policies and regulations, effective risk management and allocation, and overcoming challenges in emerging markets. Responses to these issues include leveraging public markets, ensuring a strong supply chain, and improving infrastructure connectivity. Key responses and themes from the 1-2-1 engagements include:

Investor Interest and Market Conditions

- Private sector investors are increasingly interested in investing in grid infrastructure
- Digitalisation, AI technologies, and renewable energy integration drive grid expansion
- Investors typically target utility companies due to regulated returns

Regulatory and Policy Frameworks

- Long-term certainty in policies and regulations are crucial for grid investment
- Favourable regulatory conditions help de-risk projects and attract investment

Risk Management and Allocation

- Effective risk management and allocation incentivise infrastructure investment, this includes improving pricing and risk transparency
- Regulatory stability and risk mitigation tools are likely to encourage investment in emerging markets

Investment Models and Financing

- Both project finance and balance sheet finance models face challenges in emerging markets
- Many emerging markets struggle with issuing bonds under strict green financing rules often due to high levels of coal power generation
- Leveraging public markets can bridge funding gaps for grid development

Operational and Logistical Considerations

- A strong supply chain is vital for timely delivery and installation of grid projects
- Delays in grid connectivity act as significant barriers to investment in grids and renewable energy projects

3.2. Attractiveness of investments in grids

Private sector investors are showing a growing interest in supporting the expansion of grid infrastructure. Engagements with commercial banks and asset managers reveal an increasing inclination to invest in utilities and grids on a global scale. Although these investments are typically considered defensive due to their lower and regulated returns, private finance entities acknowledged the significance of actively participating in the rising demand for energy finance and are adjusting their strategic goals accordingly.

3.3. A Need for Long Term Certainty

As with any investment, improving long-term certainty is crucial. For grid infrastructure, this certainty is driven by policies and regulations committed to the energy transition and the development of transmission and distribution networks. In countries lacking a clear, long-term commitment, private sector investment, particularly foreign direct investment from international finance providers, is likely to face significant barriers. The stock market serves as a major source of capital, and leveraging it can help achieve national grid development targets. Government commitments to the energy transition are essential for incentivising investment in grids, whether through project finance or balance sheet finance. Commitment to the GGI Targets could play a vital role in this.

Regulatory environments are key in de-risking grid infrastructure projects and encouraging private-sector investment. Favourable regulatory conditions can allow for higher rate-based returns, making it easier to attract investments in utilities. Returns from renewable energy projects, for example, can range from low double digits up to 15%, depending on the regulatory and auction processes.

Risk Allocation Measures

Introducing regulatory instruments for risk management is critical for incentivising large-scale infrastructure investment.

Risk allocation must be carefully balanced to avoid deterring potential financiers. Commercial banks prefer clear, straightforward transactions with clearly defined risk mitigation measures. To prevent banks from withdrawing from crucial energy sector opportunities, equity investors could bear a greater share of risk, allowing financial institutions to play a supporting role in structured transactions.

As poor risk allocation can create financing bottlenecks, it is essential for governments and institutional investors to collaborate on better risk-allocation mechanisms. Governments can facilitate investment by offering guarantees, implementing de-risking strategies, or providing concessional finance to make high-risk infrastructure projects more bankable. Enabling suitable risk distribution between equity investors, lenders, and governments is key to maintaining healthy capital flow into grid development.

The UK's Regulatory Environment

Ofgem in the UK and state regulators in the US set the rules and rates for utilities, which significantly impact investment decisions. The UK's regulatory framework is widely seen as stable and investment-friendly, creating a reliable foundation for long-term grid expansion. National Energy System Operator (NESO) Pathway Reports provide detailed roadmaps for grid development, offering investors greater visibility into future projects and financing opportunities.

Supportive government targets and policies that incentivise grid expansion can further boost investor confidence and stimulate capital inflows. Well-defined national energy targets, such as those outlined in the UK's energy transition strategy, indicate commitment to grid growth and optimisation and provide direction and confidence for investors.

3.4. Increased Need for Grid Investment and Expansion

Two major trends are driving the increasing demand for grid build-out and investment: the rise of digitalisation and AI-driven technologies, and the ongoing integration of renewable energy sources. As governments set energy transition targets, there is an increasing interest in developing and expanding electrical grids to support the integration of renewable energy sources. Similarly, the rise of AI technologies is driving up energy demand, which impacts utility investments as companies need to ensure they can meet this new load. While the trend towards renewable energy has been established for some time, the impact of AI on energy demand is a more recent development, but both trends are shaping private-sector investment strategies.

3.5. Utility Companies as a Primary Target

Grids are a capital-intensive and regulated sector, and companies involved are traditional utility providers rather than new entrants or independent firms. Because of this, private sector investors looking to invest in grid infrastructure, especially those who are more risk-averse, typically target utility companies rather than trying to fund new market entrants. Unlike deregulated markets where competition determines prices, utilities typically operate under regulatory frameworks that set allowable returns on investment. Investors look at these regulated returns, and the related predictable cash flows, as a key factor in deciding whether a grid investment is worthwhile.

Expanding the size of a utility's assets (e.g., adding more grid infrastructure, transmission lines, substations) allows a company to increase the regulated revenue it can earn. Since utilities often earn a fixed percentage return on their regulated asset base, growing that asset base means higher absolute returns over time. Utilities are often considered a defensive investment by private financiers because they provide essential services that are needed regardless of economic conditions. This makes them a safer investment compared to more volatile industries. In most markets, there are only a few dominant utility companies, making it a relatively closed investment space with limited competition for major projects. As new revenue opportunities emerge (e.g., smart grids, AI-powered energy management, and storage solutions), investors are increasingly seeing strong potential for returns.

In many countries, the national grid operator has a monopoly and has regulated borrowing limits. Private investors may be willing to invest, but if the national grid operator cannot take on more debt, projects may be stalled.

3.6. Investment Routes

Project Finance vs. Balance Sheet Finance Models

In general, feedback suggested that private finance organisations are prepared to provide either project finance or balance sheet finance for grid investment projects. However, both bring different challenges, particularly in Emerging Markets and Developing Economies (EMDEs). Project finance models, where investors fund specific infrastructure projects often through special purpose vehicles (SPVs) are a traditional route for providing finance but are often blocked in many vertically integrated markets due to regulatory restrictions on foreign ownership of domestic infrastructure assets.

A project finance approach was tried in Chile for the Kimal Lo Aguirre High-voltage Direct Current (HVDC) project but required legislative changes. The project was identified in 2018 as the most efficient solution to connect the solar-rich region in the north to the hydro-rich regions in the south. The estimated total investment is up to US\$2 billion until 2029, with green credits worth US\$480 million secured in an arrangement with HSBC.⁴ The legislative changes the project demanded unlock future investment and allow the project structure to be replicated.

Balance sheet finance is seen as a lower risk investment but again is often limited by the amount of debt utilities are allowed to take on. Balance sheet finance is also often difficult due to a countries' coal exposure, so a bond or project finance is needed. In many EMDEs, a bond cannot be issued under current Climate Bonds Initiative (CBI) criteria.

Bond Taxonomy Considerations

Countries and companies in emerging markets with low credit ratings find it challenging to raise finance at affordable rates. High levels of existing debt further restrict balance sheet financing, forcing these markets to seek alternative structures, such as bonds or project finance. However, issuing a bond under the CBI criteria is difficult, as many emerging markets still depend on coal or gas-fired power, making them ineligible under strict green financing rules. Green bonds could be issued for EMDEs under the GGI framework, which offers more flexibility than the CBI taxonomy. However, no green bond has been issued under this framework to date, resulting in investor hesitancy due to a lack of precedent.

While the taxonomy for bond issuances related to grids exists, the CBI criteria are unsuitable for most EMDEs because they assume a high percentage of renewables already connected to the grid, and they do not account for demand growth. This excludes many EMDEs that are still in the early stages of their energy transition. The EU taxonomy provides another possible framework, but does not align well with many EMDEs due to differences in policy, market structures, and

⁴ Dialogue Earth, [Chile's longest power line could speed up the shift to renewables](#), 2024

grid development priorities. Triggering private sector grid investment is therefore crucial as it offers a more adaptable approach, allowing for a more realistic and regionally tailored classification of investments.

Leveraging Public Markets

Financing large-scale grid expansion can also benefit from leveraging public markets. The stock market serves as a major capital source, allowing companies involved in grid development to raise funds through equity offerings, green bonds, and other financial instruments. If properly utilised, this can help bridge funding gaps for grid development and align private investment with government priorities for clean energy and infrastructure development.

3.7. Supply Chain Considerations

Grid projects rely on a strong and well-functioning supply chain. This includes physical material, specialised labour and logistical coordination to ensure timely delivery and installation. If any part the supply chain is disrupted, it can delay projects, increase costs, and deter investment. The global chip shortage, for instance, has affected the availability of smart grid technologies, delaying grid modernisation efforts. Similarly, copper shortages impact transmission line production, slowing down grid expansion. Supply chain issues and innovation risks create higher uncertainty and longer time horizons before generating returns. Venture capital (VC) firms and private capital lenders are generally more willing to take on these risks. Banks, on the other hand, focus on lower-risk, stable investments and tend to avoid high-risk, high-reward opportunities. Many battery storage projects, for example, have not generated the level of revenue initially projected, leading to heightened caution from banks when considering grid infrastructure investment.

3.8. Infrastructure and Grid-Connectivity Considerations

Delays in infrastructure and grid connectivity also impact private sector investment interest and can act as a significant barrier to investment. In markets like the UK, EU and the US, securing a grid connection can take up to five years, creating a bottleneck for renewable energy and storage projects. For EMDEs, this can take even longer depending on the role of the transmission owners / operators. Private investors cannot fund projects that lack a clear timeline for grid connection, as the delay increases financial risk. Despite private sector enthusiasm for renewable energy projects, long waiting times reduce investment attractiveness, especially compared to other infrastructure sectors with more predictable timelines.

3.9. Foreign Exchange Concerns

Foreign exchange risk and governance concerns can also deter private investment in grids in EMDEs. While in Organisation for Economic Co-operation and Development (OECD) countries regulatory stability, driven by net zero policies, can drive private-sector investment, guarantees from multilateral institutions are often required to de-risk projects in EMDEs. By providing risk mitigation tools and financial backing, development banks and international institutions can

bridge the gap between private sector financing and the infrastructure growth demand in EMDEs, encouraging sustainable grid development and long-term investment viability.

4. Conclusion and Recommendations

Significant investment in grids is required to meet increasing electricity demand, sustain the growth of renewables and achieve climate goals. Private sector investors recognise the opportunity to support grid infrastructure projects, but the allocation of private capital is dependent on key considerations in both developed and emerging markets.

In developed markets, considerations such as supply chain constraints, grid connectivity delays, and regulatory complexity slow down investment, while in EMDEs, issues like credit risk, lack of financing mechanisms, and foreign exchange concerns may deter private capital.

The availability of financing instruments, regulatory frameworks, and government-backed guarantees play a crucial role in shaping investment decisions. The introduction of the GGI framework, which offers more flexible criteria for green financing, presents an opportunity to unlock new sources of capital for grid expansion in developing markets.

To foster greater private sector involvement in grid investment, governments, regulators, financial institutions, and energy developers must engage in structured collaboration. This includes:

1. Initiatives, platforms and sector specialists like the GGI should continue to focus on establishing structured dialogue between policymakers and investors

- **GGI and similar initiatives** should build on formalised platforms for ongoing dialogue, ensuring that both policymakers and investors have clear channels to discuss investment challenges, regulatory barriers, and policy support mechanisms
- **Multi-stakeholder working groups** should be established to identify common obstacles and co-develop solutions that align investment incentives with policy objectives
- **Capacity-building efforts** should be enhanced to help policymakers better understand investor needs, particularly regarding risk appetite, return expectations, and long-term sustainability

2. Private investors should expand risk-mitigation measures and improve transparency in pricing and risk assessment

- **Institutional investors** should work with insurers, development banks, and governments to develop innovative risk-sharing mechanisms, such as blended finance, guarantees, and first-loss structures
- **Private equity and infrastructure funds** should advocate for improved data sharing and standardised risk-assessment frameworks to ensure greater transparency in pricing grid investments across different markets
- **Investors should explore credit enhancement tools**, such as political risk insurance or revenue stabilisation mechanisms, to make grid investments more attractive in EMDEs

3. All private finance actors would benefit from developing market-specific financing strategies

- **Investment funds and banks** should tailor their financing models to reflect country-specific regulatory, economic, and demand-side conditions, rather than applying a one-size-fits-all approach

- **Green finance actors** should align their strategies with local climate and energy policies to maximise their impact and ensure that investments in grid infrastructure also contribute to decarbonisation goals
- **Innovative financing structures**, such as public-private partnerships (PPPs) or securitisation of grid assets, should be adapted to different market conditions to enhance investment scalability

4. Developers and Multilateral Development Banks (MDBs) should drive innovation and new investment collaboration models with governments and regulators

- **Developers should work with MDBs** to pilot new financing mechanisms, such as results-based financing or concessional loans, to attract capital into underdeveloped grids
- **MDBs should expand their role as conveners**, facilitating collaboration between governments, private investors, and technology providers to accelerate investment in resilient and flexible grid infrastructure
- **Regulators should be engaged early in project development** to ensure that policy frameworks support innovative grid financing models and that regulatory clarity is maintained throughout investment lifecycles

5. Governments and regulators should enhance monitoring and evaluation of policy effectiveness

- **Governments should implement structured impact assessments** to evaluate whether grid investment policies are delivering on their intended objectives, such as grid expansion, reliability improvements, or integration of renewables
- **Regulators should use data-driven approaches** to track investment flows, project performance, and policy outcomes, ensuring that incentives and regulations are adjusted based on real-world results
- **Transparency should be a priority**, with regular public reporting on policy effectiveness to maintain investor confidence and demonstrate progress in improving the grid investment environment

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